Proposed Approach to the Functional Assessment of Wetlands and other Waters of the U.S. for the Bay Delta Conservation Plan

Introduction

The Department of Water Resources (DWR) proposes to utilize the assessment framework and toolset of the California Wetland Riparian Area Monitoring Program (WRAMP) for the assessment of wetlands and other waters of the U.S. for use in the Section 404(b)(1) Alternatives Analysis. This assessment will be used to determine conditions of wetland resources potentially impacted by each of the conveyance options. This method would also be used to determine the level of compensatory mitigation needed for impacts due to the proposed project.

Assessment Methodology

The Level 1 and Level 2 techniques from the Wetland and Riparian Areas Monitoring Program (WRAMP) will be used to estimate the distribution, abundance, and function of wetlands in the project area. WRAMP Level 1 methods include remotely sensed mapping of aquatic habitat (i.e., depressional, lacustrine, estuarine, riverine, slope and vernal pool wetlands and riparian functional areas) using a vetted mapping standard and protocol (www.sfei.org/baari/methods). WRAMP Level 2 methods include a rapid assessment of wetland function. The California Rapid Assessment Methodology (CRAM) for wetlands is a state-wide standard developed by and vetted through multiple state agencies and the California Water Quality Monitoring Council (CWQMC). The California Wetland Monitoring Workgroup (CWMW), a subgroup of the CWQMC, was tasked with developing CRAM as the statewide strategy for wetland monitoring and assessment.

CRAM will be used in the CWA Section 404 alternatives analysis to help determine which conveyance option is likely to have the least impact to the amount and condition of wetlands and riparian areas (will CRAM be used for open water?), based on Level 1 and Level 2 profiles. This approach supports sensitive analyses of resource extent and condition while minimizing field work and data processing.

A Level 1 landscape profile consists of size-frequency analyses of each type of wetland and riparian area based on CARI. The habitat typology follows directly from CRAM. The resulting maps will serve as the sample universe for the Level 2 profiles. Separate sets of Level 1 profiles are produced for each conveyance option.

A Level 2 landscape profile consists of the cumulative frequency distributions (CFDs) of CRAM scores based on a probabilistic survey of each type of wetland and riparian area. A probabilistic survey accounts for the inclusion probabilities of candidate sample sites, and yields survey results about the distribution of the resources among percentiles or other statistical categories of condition. In this case, the Generalized Random Tessellation Stratified Spatially-Balanced Survey Design (GRTS) in combination with a Sequential Decision Plan (SDP) will be used to minimize sample size for a targeted confidence interval (Siegmund1985, Stevens and Olsen 2004; Olsen 2005). The initial confidence interval will be set at 90%. This reflects the precision of CRAM. For the purpose of planning, it is assumed that a sample size of 20 CRAM sites will be adequate to compare optional routes, given a 90% confidence interval.

The landscape profile approach will yield comparisons between options based on their likely impacts on the acreage of each wetland and riparian areas, their size their distribution among standardized categories of overall condition.

An added benefit to the landscape profile approach is that it can lead directly to mitigation planning at the landscape scale. Once a preferred conveyance route is selected, its impact profile as developed during the alternative analysis can be compared to additional profiles of ambient condition and reference condition to determine mitigation ratios and to choose the optimal mitigation scenario.